OYSTER FARMING IN BRITISH COLUMBIA

A FINANCIAL INFORMATION GUIDE

by
T. T. Pobran

Paper No. 3
December 1983

Province of British Columbia
Ministry of Environment
MARINE RESOURCES BRANCH

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Canadian Cataloguing in Publication Data

Pobran, T. T. (Theodore Thomas), 1951-
Oyster farming in British Columbia

(Paper, ISSN 0713-2549 ; no. 3)

Bibliography: p.
ISBN 0-7726-0276-X

1. Oyster-culture - British Columbia - Finance.
I. British Columbia. Marine Resources Branch.
II. Title. III. Series: Paper (British Columbia.
Marine Resources Branch) ; no. 3.

SH367.C3P62 1985 639'.411'09711 C85-092105-8

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ACKNOWLEDGEMENTS

I would like to express my appreciation for the cooperation of the staff and use of the facilities at the Ministry of Industry and Small Business Development. I owe special thanks to Mr. Ken Roueche, for reviewing the report and providing valuable comments.

I would also like to extend my gratitude to those members of the British Columbia Oyster Growers' Assocation for providing me with the necessary information that made this report possible.

Finally, I wish to thank members of the Marine Resources Branch, in particular, Mr. Jim Fralick for his guidance on the subject and Michele Dupuis and Nellie Lee for cheerfully typing the many drafts of this report.

Introduction

The way in which a business is organized has a considerable bearing on its ultimate success or failure. In operating an oyster farm, the grower needs to make decisions relating to acquisition and use of farming assets, financing of farm capital requirements, labour use, production and so on.

For British Columbia oyster growers, there will be different answers for different situations since every farming business is unique, in at least some respects. Nevertheless, there are some basic questions common to all business activities which need to be reviewed carefully before an intelligent decision can be made as to how to set up or organize a farming business. The purpose of this report is to identify and address these basic questions.

This publication consists of two parts. Part I is intended to inform prospective and existing growers of some of the financial aspects and labour requirements for an oyster farming operation. It provides information on how to prepare an income and expense statement and cash flow budget - formats essential to business planning. Part II[1] is a more comprehensive cost analysis employing current capital budgeting techniques and is directed towards assisting investors, operators and financial institutions in evaluating oyster culture operations.

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[1]Part II is a result of recommendations put forth by the 1982 Review of Species Available for Mariculture in British Columbia Report suggesting that cost information be generated to determine the feasibility of oyster culture in the Province.

Because of the diversity in oyster culturing methods, five composite models have been developed based on information obtained from successful oyster farming operations and Marine Resources Branch reports.

It is reasonable to assume that the models are sufficient to provide gross estimates of the financial and labour parameters associated with a cottage size oyster farming operation located within the Baynes Sound area of British Columbia. All figures are based on 1982 costs except for lease rentals which are based on 1984 rates.

Debt servicing was excluded because of the variability in loan characteristics which are in part determined by the prevailing economic climate and the individual's equity, security and assets to be financed. It is recommended that prospective and existing oyster farmers, using the worksheets provided, conduct a similar analysis for their farming operation to determine its viability and to reveal potential problems and opportunities for financing.

SUMMARY AND CONCLUSIONS

Bottom culture, a conventional technique, requiring increased labour has a higher rate of return than stake or near bottom longline culture and can produce oysters for the least capital outlay. Deep water longline, a relatively recent technique used in British Columbia waters, is more capital intensive than bottom culture and thus involves more risk, but provides the opportunity to make greater profits per unit of time, area and labour.

From the following report it is apparent that oyster culture can be an economically attractive investment under certain conditions. The internal rates of return for low level production operations (8907 liters/year) requiring capital outlay for a vehicle and vessel are seemingly insufficient to provide for a financial or business risk premium. Although loan servicing was omitted it is still an important cost component and could significantly reduce the acceptability of a culture operation. However, in most cases, interest on loans and risk premiums can be accounted for in the added return generated by rescaling production or by employing cost saving measures i.e., setting tank and less expensive vehicle and vessel.

Like other types of family farming operations there are often non-financial goals such as lifestyle preferences and job satisfaction that have to be taken into account when comparing the return on the operation and the risk factor involved. As mentioned later on, many family operations do not consider labour

as a cost item because the business provides a living for the family as a work unit. In such circumstances, bottom culture may be considered as being of greater economic potential than those culture practices that are capital intensive. The economic potential can be increased in a family run operation by integrating a processing plant. The associated internal rates of return with labour included as a cost item are certainly not substantial, but do provide a means to enhance the profit outlook.

The question of whether or not the various oyster culture practices are attractive investments is ultimately a subjective decision to be made by the grower based on personal endowments and his perception of the expected returns and risk factors involved.

The purpose of this report is to provide information upon which investment decisions can be made. The economic efficiency can vary considerably depending on culture technique, material inputs, site location, etc. It is important for the grower/investor to look beyond this report to ensure that all relevant factors are considered before a final decision is reached.

PART I

Income and Expense Statement

The income and expense statement is used to indicate the profit or loss of a business over a given period of time. It lists in detail operating receipts, operating expenses and depreciation. As a result, the statement arrives at the net income using the accrual[1] method of accounting.

The income and expense statement is not the same as a statement of receipts and expenses for income tax purposes. The income and expense statement is designed to show the actual value of production for each year and the total expenses associated with that production. It does not necessarily reflect cash expenses and cash receipts that would be incurred by the business during the course of the year. In addition, depreciation reflects the actual loss in value of machines and buildings during the course of the year and does not necessarily reflect the same dollar value as would be claimed under the capital cost allowance section on an income tax statement.

Annual income and expense statements are presented in Tables 1-4 for bottom, stake, near bottom longline and deep water longline culture operations. Table 5 is an income and expense statement incorporating a processing plant with a bottom culture operation. It is assumed that each operation is in full production and has a sustained harvest of 8,907 liters/year

[1]Under this method income is recorded in the year it is earned regardless of when payment is received. In addition, expenses are deducted in the year incurred, whether paid or not.

(2,353 U.S. gallons). The shellstock is valued at $20,000 ($8.50/3.8 liters [1 U.S. gallon]) unprocessed and $48,700 processed (based on the assumption that half the product is sold in 8 oz. containers at $1.55 each and the other half in 32 oz. containers at $4.85 each).

Because of the cottage type operation, labour requirements are generally fulfilled by the associated family and are frequently considered as free or implicit[1] and are, therefore, not considered as a cost item. However, in this report estimated implicit labour costs are included as a cost item. These costs are broken down in Appendix I Tables 1a-e and entered as a total in the income and expense statements. The major component of the operating costs is labour, and ranges from 27% for deep water culture to 36% for bottom culture.

The net farm income arrived at, following a run in period, indicates that each culture technique can be the basis for a viable oyster farming operation. It is important to realize that the projected incomes are based on the assumption that the monetary unit is stable. This means that revenues and expenses are measured at the same price levels each year and do not account for any possible shifts in expenses or revenues.

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[1] Implicit costs: Estimated costs for services combined within the family operation that would have to be paid for if the services were secured from someone outside of the operation.

Operating Costs

1. Labour - Labour is based on a rate of $6.00/hour, except for shucking which is based on a rate of $3.50/gallon.

2. Vacation Pay, U.I.C. and W.C.B. Contributions - These deductions are estimated to be 15% of gross wages.

3. Seed - Mortality rates of 70% for bottom culture and 50% for off bottom culture systems and a conversion factor of 120 oysters/3.8 liters (1 U.S. gallon) were taken into account when seed requirements were calculated. The average price of seed is $8.00 per vexar bag which contains approximately 100 cultch with a mean count of 15 spat/cultch.

4. Fuel & Lubricants - Fuel to operate a vehicle and small vessel for a part time operation with an oyster production equivalent to 7,570 liters of shucked product per year is estimated to be $600 (approximately 1,364 liters of fuel).

5. Insurance - Insurance for a vehicle and small vessel is estimated to be $300 and $500, respectively. All culture systems require liability insurance. This amounts to a minimum premium of approximately $200 per annum per 2 hectares for a $1,000,000 liability insurance policy. An additional $200 would be required to insure the processing plant.

6. Lease Taxes & Rent - Lease taxes vary from $1.50-6.00 per 0.4 hectare (one acre) per year depending upon the productive capability rating. Bottom culture usually occurs on a lease with average or above average productivity capabilities, therefore a tax of $3.00/0.4 hectare/year was used. Off bottom culture usually occurs on a marginal lease with a low productivity rating and thus a minimum tax of $1.50/0.4 hectare/year was used.

Rental fees per lease are based on a rate of 1% of the annually adjusted Actual Land Value for the first 5 years and 5% thereafter. A minimum of $200 per lease is charged. Presently, the estimated Actual Land Value for a .4 hectare lease is $650 for an average to good growing site and $500 for a marginal growing area.

Summary

	Area (Hectares)	Tax	Rental First 5 yrs.	After 5 yrs.
Bottom Culture	5.7	42.00	200.00	460.00
Stake Culture	2.4	9.00	200.00	200.00
Near Bottom Longline	2.4	9.00	200.00	200.00
Deep Water Longline	1.5	6.00	200.00	200.00

7. Property Taxes - Property taxes for reclaimed foreshore on which a processing plant is situated varies with the region and assessed value of the property. A reasonable estimate of property taxes for a facility located in a rural area is $400.

8. Repairs and Maintenance - In calculating repair and maintenance costs, it is necessary to take into account that the equipment is only used on a part time basis. These expenses are estimated to be 1% of the total capital costs for a processing plant, vehicle, vessel and miscellaneous equipment.

9. General Business - The total cost to operate an in-home office including telephone, supplies, etc., is estimated to be $400 per annum.

10. Packing Material - Costs for packing material are based on half of the shucked product being packed in 237 milliliter (8 oz.) containers and half in 946 milliliter (32 oz.) containers. The costs for 237 milliliter and 946 milliliter containers are $65.40/1,000 and $167.59/1,000, respectively. These prices include labelling. Lids cost $44.52/1,000. In addition, 11.4 liter shipping boxes, costing $600/1,000 are required.

11. Heating Fuel - Heat is required in the processing plant during the winter. The total heating fuel cost is estimated to be $700 per annum.

12. Electricity - Electricity is required to provide lighting and refrigeration, etc. The total electricity cost is estimated to be $600 per annum.

13. Marketing Board - A Marketing Board fee of 30¢ per 3.8 liter is charged. Based on a production of 7,570 liter, the fee amounts to $600 per annum.

14. Shipping - Freight charges from Baynes Sound (Courtenay) to Vancouver are approximately $1.72 per 3.8 liter. Total freight costs are estimated to be $3,440 per annum.

15. Survey Fees - Survey fees are estimated to cost $1,000 per lease.

Capital Costs

1. Vehicle - A 3/4 ton truck would cost $10,000 and have a minimum life expectancy of 10 years. This capital outlay could be reduced by purchasing a less expensive truck for $5,000 and still have a 10 year life expectancy.

2. Vessel - A 7.6 meter with winch and powered by a 40 h.p. outboard engine is valued at $8,200 (skiff - $6,000, engine - $2,200). The engine and skiff would have a minimum life expectany of 5 and 20 years, respectively. This capital outlay could be reduced by purchasing a less expensive skiff for $3,000 and still have a 20 year life expectancy.

3. Off Bottom Culture Systems

   a. Stake - 46 centimeter expanded poly vinyl chloride stakes cost 27.75¢ each. The total cost (labour to

insert nails not included) for 37,760 stakes with nails would be $12,015.

b. Near Bottom Longline Posts - 1.2 meter posts, pointed, notched and treated to last 12 years, would cost $6,486 ($1.95 each).

Cultch suspended from a near bottom longline system are strung on 2 ply polypropylene rope (oyster blue) 20 centimeters apart. One roll (648 meters) costs $22.25.

c. Deep Water Longline Floatation - 1 cubic foot of styrofoam floats sufficient to support marketable oysters produced on 2 strings with 15 cultch each are estimated to cost $2.25 each.

Anchors - 27-205 liter drums filled with cement and rocks are estimated to cost $675.

Rope - 823 meters of 16 millimeter (5/8") polypropylene and 1,219 meters of 13 millimeter (1/2") polypropylene is estimated to cost $760.

Cultch suspended from a deep water longline system are strung on 2-ply polypropylene rope (oyster blue) 20 centimeters apart. One roll costs $22.25.

4. Processing Plant - A 102 square meter (1,100 square feet) facility fully equipped is estimated to cost $40,320 (see Table 6 for cost breakdown).

5. Miscellaneous Equipment - Many items are required in the everyday operation of an oyster farm. These include:

Wheelbarrow ($200 each x 2)	$400.00
Burlap Sacks (28¢ each x 2,000)	600.00
Hoes	50.00
Rakes	50.00
Buckets	50.00
Cultch Puncher	50.00
Stake Hole Puncher	150.00

A list of the above capital expenditures with corresponding life expectancies and annual depreciation rates are also provided in Table 6.

Table 1. Income and expense statement for a bottom culture operation in full production (8907 liters/year)

Revenue	$20,000
Less Operating Costs	
Labour	5,430
Vacation Pay, U.I.C., C.P.P. and W.C.B. Contributions	815
Seed	4,270
Fuel and Lubricants	600
Insurance	1,000
Lease Taxes and Rent	502
Repairs and Maintenance	200
General Business	400
Depreciation	2,380
Net Income Before Taxes	$ 4,403

Table 2. Income and expense statement for a stake culture operation in full production (8907 litres/year)

Revenue	$20,000
Less Operating Costs	
Labour	4,098
Vacation Pay, U.I.C., C.P.P. and W.C.B. Contributions	613
Seed	3,025
Fuel and Lubricants	600
Insurance	1,000
Lease Taxes and Rent	209
Repairs and Maintenance	200
General Business	400
Depreciation	4,882
Net Income Before Taxes	$ 4,973

Table 3. Income and expense statement for a near bottom longline culture operation in full production (8907 liters/year)

Revenue	$20,000
Less Operating Costs	
Labour	4,827
Vacation Pay, U.I.C., C.P.P. and W.C.B. Contributions	724
Seed	3,025
Fuel and Lubricants	600
Insurance	1,000
Lease Taxes and Rent	209
Repairs and Maintenance	200
General Business	400
Depreciation	4,115
Net Income Before Taxes	$ 4,900

Table 4. Income and expense statement for a deep water longline culture operation in full production (8907 liters/year)

Revenue	$20,000
Less Operating Costs	
Labour	3,396
Vacation Pay, U.I.C., C.P.P. and W.C.B. Contributions	509
Seed	3,025
Fuel and Lubricants	600
Insurance	1,000
Lease Taxes and Rent	206
Repairs and Maintenance	200
General Business	400
Depreciation	3,317
Net Income Before Taxes	$ 7,347

Table 5. Income and expense statement for a integrated bottom culture and processing plant operation.

Revenue	$48,700
Less Operating Costs	
Labour	15,675
Vacation Pay, U.I.C., C.P.P. and W.C.B. Contributions	2,351
Seed	4,270
Packing Material	3,340
Shipping	3,440
Fuel and Lubricants	600
Heating Fuel	700
Electricity	600
Office and General Business	400
Marketing Board	600
Lease Taxes and Rent	502
Property Taxes	400
Repairs and Maintenance	500
Insurance	1,200
Depreciation	4,007
Net Income Before Taxes	$10,215

Table 6. Estimated capital expenditures with corresponding life expectancies and straight line depreciation rates for each culture system.

Culture System	Capital Expenditure		Life (Years)	Annual Depreciation
BOTTOM	3/4 Ton Truck	$ 10,000	10	$ 1,000
	Vessel	6,000	20	300
	Outboard Motor	2,200	5	440
	Other	1,200	5	240
Total				$ 2,380
STAKE	3/4 Ton Truck	$ 10,000	10	$ 1,000
	Vessel	6,000	20	300
	Outboard Motor	2,200	5	440
	Stakes	33,300	12	2,775
	Nails	4,920	3	1,640
	Other	1,200	5	240
Total				$ 6,695
NEAR BOTTOM LONGLINE	3/4 Ton Truck	$ 10,000	10	$ 1,000
	Vessel	6,000	20	300
	Outboard Motor	2,200	5	440
	Posts	19,800	12	1,650
	Stringing	930	3	310
	Other	1,200	5	240
Total				$ 4,240
DEEPWATER LONGLINE	3/4 Ton Truck	$ 10,000	10	$ 1,000
	Vessel	6,000	20	300
	Outboard Motor	2,200	5	440
	Longline System			
	Stringing	1,000	2	500
	Rope	1,600	5	320
	Anchors	1,400	20	70
	Floats	5,670	10	567
	Other	600	5	120
Total				$ 3,317

Table 6. (CONT'D)

Culture System	Capital Expenditure		Life (Years)	Annual Depreciation
PROCESSING PLANT (output capacity 300 liters/8 hours)	Building			
	Structure (102 m^2)	$30,000	30	$ 1,000
	Cooler (14.25 m^2)	4,000	30	133
	Equipment			
	Shucking Facility	970	30	32
	Bubbler	750	30	25
	Grading Facilities	900	30	30
	Packing Facilities	1,200	30	40
	Winch/Boom	2,000	10	200
	Miscellaneous	500	3	167
Total				$ 1,627

PREPARING A PROJECTED INCOME AND EXPENSE STATEMENT

Step 1:

The initial step in preparing a projected income and expense statement is to estimate your annual revenue or sales on a monthly, quarterly or yearly basis, whichever suits your marketing arrangements. This is based on the quantity of oyster seed to be planted in each particular year. The type and magnitude of culture operation, associated survival rates and estimated value of end product, have to be taken into account when calculating the quantity of product that will be marketable at a given time.

Formula:

$$\text{Revenue} = \left(\frac{\text{size of area} \times \text{recommended planting density} \times \text{survival rate}}{\text{conversion factor from unshucked product to liters}}\right) \text{Value of Marketable Product}$$

Example: 0.4 ha Bottom Culture Operation

$$\$6{,}192 = \left(\frac{4{,}047\ m^2 \times 72\ \text{spat}/m^2 \times 0.3}{120\ \text{oysters}/3.8\ \text{liters}^*}\right) \$8.50/3.8\ \text{liters}^*\ \text{unprocessed}$$

*3.8 liters = 1 U.S. gallon

$6,192 represents a probable revenue forecast upon which further planning can be based.

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[1]For more information on seeding densities, survival rates etc. see The B.C. Shellfish Mariculture Newsletter, Vol. 3, No. 2, March, 1983.

Step 2:

The next step is to estimate monthly operating expenses. This includes all the purchases of items used in the oyster farming operation except capital purchases. Most items can be accurately assessed by obtaining quotes from suppliers or estimates provided from existing or similar types of operations. Interest on loans and service charges must also be included.

Step 3:

Estimate the depreciation in each year by using the "straight line method." In utilizing this method an equal amount of the original capital cost of the item is ascribed to each year of life of the item to account for its decline in value due to use, obsolescence and reduced serviceability[1].

Example:

Item	Initial Expenditure	Life (Years)	Annual Depreciation
3/4 ton pickup	$10,000	10	$1,000

Step 4:

Calculate the annual net income by subtracting annual operating expenditures and depreciation from the annual revenue.

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[1]For further information and depreciation see Taxation and the B.C. Farmer: a layman's guide by William A. Barclay.

Worksheet.

Income and Expense Statement

	Actual 19__	Projected 19__	Actual 19__	Projected 19__	Actual 19__	Projected 19__	Actual 19__	Projected 19__
REVENUE								
LESS OPERATING COSTS								
Labour								
Vacation Pay, U.I.C., C.P.P. and W.C.B. Contributions								
Seed								
Packing Material								
Shipping								
Fuel & Lubricants								
Heating Fuel								
Electricity								
Office & General Business								
Marketing Board								
Leases Taxes & Rent								
Property Taxes								
Repairs & Maintenance								
Insurance								
Interest on Loan								
Depreciation								
NET INCOME								
(Revenue - Operating Expenses)								

PROJECTED YEARLY CASH FLOW BUDGET

The cash flow budget shows cash expenditures and/or cash receipts that are expected in a business over a given time period. It includes the total amount of cash that enters or leaves the business as income or leaves the business as expenses as well as the amounts involved in capital purchases, capital sales, debt payments and personal expenditures (income tax).

The cash flow budget does not tell you how profitable a farm business will be over the next year because it uses only cash receipts and cash expenses. The income changes that result from changes in depreciation are not included.

The cash flow budget can help to provide the following information.

1. The amount of cash that will be generated from the farm unit as well as the cash expenditures expected.
2. The surplus or deficit periods of cash flow indicating when borrowed money will be required and when repayment of borrowed funds can occur.

Appendix II Tables 2a to 2c show projected 10 year cash flow budgets for each of the oyster farming models. The effect of capital expenditures on the overall financial position of each oyster farming model is readily evident. Negative net annual cash flows are encountered from year 0 to year 4 depending on the run in period of the technique employed. Any financing

required would have to be coordinated with these expected cash flows.

The accuracy of the cash flow budget depends on many factors. Despite the uncertainty associated with future cash transactions, a cash flow budget can be a useful management tool. To be most effective it must be used and updated as conditions change your original projections.

PREPARING A CASH FLOW

Step 1:

Use annual revenue, operating and capital expenditure figures estimated for the projected income and expense statement. Included in the cash inflow is personal and non farm income and revenue from other sales e.g., equipment, etc. Along with the general operating costs, the cash outflow is comprised of loan payments (principal plus interest), non farm expenses (living expenses, etc.) and income tax as per your tax return. Loan payments (principal plus interest must also be included). Depreciation of capital assets is not included.

Step 2:

Calculate the cash surplus or deficit by subtracting the total cash outflow from the total cash inflow.

Step 3:

Calculate the cash surplus or credit required by summing the cash surplus or deficit and the opening balance. The opening balance is the amount of cash you initially started out with.

It is important that the projected cash flow budget be revised on an ongoing basis as actual income and expenditures may vary considerably from estimated figures. In extreme situations it may be necessary to replan particular aspects that are essential to the survival of the oyster farming operation.

Worksheet.

Cash Flow Budget

	Actual 19__	Projected 19__	Actual 19__	Projected 19__	Actual 19__	Projected 19__	Actual 19__	Projected 19__
CASH INFLOW:								
REVENUE								
Oyster Sales								
Other Sales								
Personal Income								
Non-Farm Income								
TOTAL CASH INFLOW								
CASH OUTFLOW:								
OPERATING & CAPITAL EXPENDITURES								
Labour								
Vacation Pay, U.I.C., C.P.P. & W.C.B. Contributions								
Seed								
Packing Material								
Shipping								
Fuel & Lubricants								
Heating Fuel								
Electricity								
Office & General Business								
Marketing Board								
Leases Taxes & Rent								
Property Taxes								
Repairs & Maintenance								
Insurance								
Capital Expenditures								

(CONT'D)

Worksheet. (CONT'D)

Cash Flow Budget

	Actual 19__	Projected 19__	Actual 19__	Projected 19__	Actual 19__	Projected 19__	Actual 19__	Projected 19__
Loan Payments								
Non-Farm Expenses								
Income Tax Payable								
TOTAL CASH OUTFLOW								
CASH SURPLUS OR DEFICIT (Inflow - Outflow)								
OPENING CASH BALANCE Surplus or Credit Required (Cash surplus or deficit plus opening balance)								

PART II

CAPITAL BUDGETING

Capital budgeting provides a means to evaluate the relative merits of the various oyster culture techniques. It involves the analysis of projected net cash revenue flows generated by investment projects over their entire economic life. The total value of a particular investment is not simply determined by summing up the net revenues for the projected time period. The time value of money must be taken into account. This is based on the economic fact that a given sum of money is worth more in the present than at some future date because of its current earnings potential. Therefore, future net revenues must be discounted to their present values using an appropriate discount rate. The capital budgeting technique used in this report which incorporates the time value of money concept is the internal rate of return method. The internal rate of return for an investment project is defined as the after tax discount rate which equates the present value of the annual net cash revenue flows with the project's acquisition cost. It is a profitability index that facilitates easy comparison among various investment proposals.

Another capital budgeting technique used in this report to evaluate profitability is the payback method. This is simply defined as the number of years it would take for an investment to pay for itself. Although this method fails to account for

the cash flows beyond the payback period as well as the time value of money, it does identify those investments that have a favourable short run effect on a project's cash flow picture.

Revenues and costs from Part I of this report were projected over 20 years and re d by a financial analysis program which computed internal rates of return and payback periods. These computations were performed using the facilities of the Ministry of Industry and Small Business Development, Province of British Columbia. A projection of 20 years was chosen as a compromise between accuracy and computational tedium.

All figures were converted from real to nominal using a 20 year projected Vancouver Consumer Price Index (Appendix IV).

No financing was taken into consideration for reasons mentioned in Part I of this report. The Small Business Tax Rate of 25% was used and no Investment Tax Credit was taken. In accordance with the Income Tax Act losses were carried forward for five years from year of origin. Depreciation was taken into account by claiming capital cost allowance (CCA) on the implements and buildings used in the oyster culture operations. Under the Income Tax Regulations depreciable assets are grouped into "classes" and assigned a depreciation rate. For income tax purposes the allowable depreciation charge as an operating expense is based on this rate and the original cost of the capital item. The classes of depreciable assets and rates of allowance are tabled in Appendix III.

Salvage values of capital equipment and goods in process

(oyster seed) were taken into account at the end of the 20 year economic life for each culture model. The salvage value of equipment and oyster seed was based on the straight line method of depreciation and the original value, respectively.

Discussion

Net cash flows for model oyster culture operations at two different levels of production are illustrated in Appendix V Tables 5a to 5d. The internal rates of return (IRR) and pay back periods determined from these cash flows are tabulated in Table 7.

The low level production operation (8907 liters/year) internal rates of return range from a high of 21.84% for deep water longline culture to a low of 10.14% for stake culture and reflects the capital efficiency inherent within each culture technique. This is not to say that stake culture should be considered as an undesireable technique, but rather an alternative technique (for use on leases that have excessive wave exposure and/or soft muddy bottoms) that a grower may want to utilize if he had a source of suitable materials for the stakes at little or no cost and construct them himself i.e., stakes constructed from cedar blocks (Clayton, W.E.L. and T.T. Pobran, 1981). Because of the lack of standardization in the industry, the substitution of materials for those that are incorporated into the techniques of the model operations discussed here may be appropriate depending on their suitability, availability and cost to the individual grower.

Table 7. Payback periods and internal rates of return on equity based on discounted cash flows of oyster culture operations.

	Low Level Production 8,907 LITERS/YEAR				High Level Production 17,814 LITERS/YEAR	
	High Priced Vehical & Vessel)		(Setting Tank, Less Expensive Vehicle & Vessel)		New Priced Vehicle & Vessel	
	Pay Back (Years)	IRR on Equity (Percent)	Pay Back (Years)	IRR on Equity (Percent)	Pay Back (Years)	IRR on Equity (Percent)
Bottom	12.22	11.24	6.05	25.18	8.54	16.46
Stake	12.18	9.91	7.65	17.41	9.18	13.72
Near Bottom	9.07	10.08	6.46	20.66	7.82	15.57
Deep Water	6.13	21.49	3.38	45.08	4.81	29.69
Bottom With Processing Plant	9.83	14.27	7.28	21.83	7.80	21.63

The higher turnover or yield associated with the off bottom culture techniques offsets the high capital outlay on stakes, longlines and posts. It takes two and three years for an oyster to reach a marketable size utilizing a deep water or near bottom system, respectively, as opposed to four years if the oysters are simply grown on the bottom.

In addition, the high capital outlay for off bottom techniques is further compensated for by the reduced labour inputs in comparison to bottom culture (see Appendix I, Tables 1a-1e).

The low level production operation pay back periods range from 6.06 years for deep water longline culture to 12.07 for stake culture. Investments with pay back periods of this duration would have an unfavourable effect on each of the oyster farm model cash flows and hence their asset liquidity. The number of years it takes for each investment to pay for itself is protracted by the timing of the revenue flows which do not begin to come on stream until 3, 4 or 5 - depending on the culture technique used.

Tables 5f-5j are cash flows based on revised operating and capital expenditures that were determined by doubling output and only those costs directly associated with the increase in production. For example all the operating costs were doubled except for insurance premiums, heating fuel, electricity and property taxes. All the capital expenses were doubled except for the cost of the vehicle, boat, motor and processing facility.

Table 7 shows how the re-scaling of the culture systems to a higher level of production affects the pay back periods and internal rates of return. Pay back periods decrease by one to three years and internal rates of return increase by 3.7 to 8.2% depending on the culture system. When a processing plant is integrated with a bottom culture operation the IRR increases from 14.56 % in the low level production operation to 21.9% in the high level production operation. Clearly the capital efficiency increases and each system becomes more attractive from an economic standpoint.

The economic viability could further be enhanced through cost reduction. Eyed larvae setting tanks have been demonstrated to reduce seed costs by 50% (Jones, G. and B. Jones, 1982). A further advantage with the eyed larvae method is that setting can occur early in the spring thus giving an oyster the advantage of a full summer's growth in comparison to natural catches which do not usually occur until late summer. Thus the grow out period, no matter the techniques employed, can be reduced by one year and the ultimate benefit being that the turnover rate is increased by 25%, 33% and 50% for bottom culture, near bottom culture and deep water culture, respectively.

In addition to incorporating a setting tank into an oyster culture operation, costs can also be reduced by purchasing a lower priced vehicle and vessel. Cash flows taking into account the cost reductions are presented in Tables 5k-5o. The cash management of each culture method would not require special

assistance once steady production has been attained.

Table 7 illustrates the overall effect on a low level production operation when these cost saving measures are considered. Pay back periods decrease by 2 1/2 to 4 1/2 years and internal rates of return increase from 7.6 to 23.9% depending on the culture system.

Thus, through substitution of material inputs and integration of technological advances, profit margins increase and a possible barrier to entry is overcome by reducing the initial cash outlay.

ADDENDUM

Since the completion of the cost analysis in Part II of this report restrictive government monetary policies have moderated inflation and stabilized interest rates. In view of this fact it now appears beneficial to incorporate financing into the feasible cash flows.

Appendix VI, Tables 6a to 6j incorporate 75% financing of the capital investments with a 12% interest rate applied to the borrowed money. The repayment of the loan proceeds as cash after tax becomes available with the outstanding interest owed taking priority over the outstanding principal owed.

The revenue generated for each cash flow is sufficient to repay the loans providing that the farm operator has the down payment and operating capital to met the cash shortfall incurred during the run-in period. Although the net cash flows are negative during the incipient years and zero or exceptionally low for some years in which a significant capital investment is required to replace equipment, they are still of an acceptable magnitude over time to establish a sufficient cash reserve.

Generally loan limits are determined according to the capability of a firm to service the debt with relatively little or no payment deferment. However, for oyster farming it is requisite that terms be negotiated to fit the type of growout technique. The oyster farmer and lender must arrive at a repayment schedule which will meet the security needs of the banker and, at the same time, provide the grower with a schedule of payments that will fit the cash flow of his operation.

REFERENCES

Albrecht, K. and W.E.L. Clayton, 1983. Oyster Seed - How much is enough. The B.C. Mariculture Newsletter, Vol. 3, No. 2 Marine Resources Branch, Ministry of Environment, Province of British Columbia.

Barclay, W.A., 1979. Taxation and the B.C. Farmer: a layman's guide. Ministry of Agriculture. Province of British Columbia. 38 pp.

Clayton, W.E.L. and T.T. Pobran, 1981. A Pacific Oyster Stake Culture Pilot Project in British Columbia. Fisheries Development Report No. 30. Marine Resources Branch, Ministry of Environment, Province of British Columbia. 3 pp.

Fralick, J.E. 1979. Economic analysis of the B.C. oyster industry. The B.C. oyster industry: policy analysis for coastal resource management. Vol. II. Techical Report No. 20. Westwater Research Centre. 34 pp.

Jones, G. and B. Jones, 1983. Methods for Setting Hatchery Produced Oyster Larvae. Information Report No. 4. Marine Resources Branch, Miistry of Environment, Province of British Columbia. 69-82 pp.

Revenue Canada, 1982. T2 Corporation Income Tax Guide, 10, 28 pp.

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Appendix I. Estimated labour requirements for oyster culture operations producing 8907 liters/year.

Table 1a. Estimated annual labour requirements for bottom culture.

	Hours	Cost[1]
Spread Seed (@ 15 min./bag)	15	90
Break Seed (15 min./bag)	160	960
Transplant & Grow Out Maintenance (900 oysters/hour)	315	1,890
Harvest & Transport Oysters to Processor (13.2 min./sack)[2]	415	2,490
TOTAL	905	5,430

[1]Cost - based on hourly rate of $6.00/hour.
[2]150 oysters/sack.

Table 1b. Estimated annual labour requirements for stake culture.

	Hours	Cost[1]
Punch Cultch (5 sec./cultch)	53	318
Insert Nails Into Stake (8 sec./stake)	84	504
Plant Stake & Place Cultch (15 sec./stake)	158	948
Harvest & Transport Oysters to Processor (35 sec/stake)	367	2,202
TOTAL	683	4,098

[1]Cost - based on hourly rate of $6.00/hour.

Table 1c. Estimated annual labour requirements for near bottom longline culture.

	Hours	Cost[1]
String Cultch (20 sec./cultch)	210	1,260
Install Posts[2] (10 min./post)	395/3yr $\bar{x}$ = 119/yr	2,370/3yr $\bar{x}$ = 711/yr
Hang Strings (10 min./50' section)	89	534
Grow Out Maintenance	20	120
Harvest & Transport Oysters to Processor (35 sec./cluster)	367	2,202
TOTAL	1,081	6,486

[1]Cost - based on hourly rate of $6.00/hour.
[2]Posts - posts would be installed over a three year period and replacement would not begin until year 13.

Table 1d. Estimated annual labour requirements for deep water longline culture.

	Hours	Cost[1]
String Cultch (5 min./string)	210	1,260
Install Longline[2]	100/2yr $\bar{x}$ = 50/yr	600/2yr $\bar{x}$ = 300/yr
Suspend Strings (30 sec./string)	21	126
Grow Out Maintenance	20	120
Harvest & Transport Oysters to Processor (7.5 min./string)	315	1,890
TOTAL	666	3,996

[1]Cost - based on hourly rate of $6.00/hour.
[2]Longline would be installed over a two year period and replacement of rope would not begin until year 6.

Table 1e. Estimated labour requirements for integrated bottom culture and processing plant operation.

	Hours	Cost[1]
Processing		
Shucking (20 min.gal.)	787	8,235
Grade and Pack	335	2,010
Culture		
- see bottom culture estimates for labour breakdown		
TOTAL	2,027	15,675

[1]Cost - Based on hourly rate of $6.00/hour except for shucking which is based on a rate of $3.50/gal.

Appendix II. Projected yearly cash flow budgets for culture operations producing 8,907 liters/year.

Table 2a. Projected yearly cash flow budget - bottom culture. (Terminal or salvage value not included.)

YEAR	REVENUE	OPERATING EXPENSES			CAPITAL EXPENSES			NET INCOME BEFORE TAXES	INCOME TAX*	NET ANNUAL
		Labour	Seed	Other	Vehicle	Vessel	Other			
0	-	1,050	4,270	2,870	10,000	8,200	600	0	0	(26,990)
1	-	2,940	4,270	2,283					0	(9,493)
2	-	2,940	4,270	2,283					0	(9,493)
3	-	2,940	4,270	2,283					0	(9,493)
4	20,000	5,430	4,270	3,002			600	6,698	0	6,698
5	20,000	5,430	4,270	3,162			600	6,538	0	6,538
6	20,000	5,430	4,270	3,162		2,200		4,938	0	4,938
7	20,000	5,430	4,270	3,162				7,138	0	7,138
8	20,000	5,430	4,270	3,162			600	6,538	0	6,538
9	20,000	5,430	4,270	3,162			600	6,538	0	6,538
10	20,000	5,430	4,270	3,162				7,138	0	7,138

*Little or no income tax is payable over the 10 year period. Losses in a particular year can be carried forward up to five years to reduce taxable income.

Table 2b. Projected yearly cash flow budget - stake culture. (Terminal or salvage value not included.)

YEAR	REVENUE	OPERATING EXPENSES			CAPITAL EXPENSES				NET INCOME BEFORE TAXES	INCOME TAX*	NET ANNUAL
		Labour	Seed	Other	Vehicle	Vessel	Other	Stakes			
0	-	1,770	3,025	3,450	10,000	8,200	600	12,015		0	(39,060)
1	-	1,896	3,025	2,093				12,015		0	(19,029)
2	-	1,896	3,025	2,093				12,015		0	(19,029)
3	20,000	4,098	3,025	3,022			600	1,548	7,707	0	7,707
4	20,000	4,098	3,025	3,022				1,548	8,307	0	8,307
5	20,000	4,098	3,025	3,022			600	1,548	7,707	0	7,707
6	20,000	4,098	3,025	3,022		2,200		1,548	6,107	0	6,107
7	20,000	4,098	3,025	3,022				1,548	8,307	0	8,307
8	20,000	4,098	3,025	3,022			600	1,548	7,707	0	7,707
9	20,000	4,098	3,025	3,022				1,548	8,307	0	8,307
10	20,000	4,098	3,025	3,022				1,548	8,307	0	8,307

*Little or no income tax is payable over the 10 year period. Losses in a particular year can be carried forward up to five years to reduce taxable income.

Table 2c. Projected yearly cash flow budget - near bottom longline. (Terminal or salvage value not included.)

YEAR	REVENUE	OPERATING EXPENSES			CAPITAL EXPENSES				NET INCOME BEFORE TAXES	INCOME TAX*	NET ANNUAL
		Labour	Seed	Other	Vehicle	Vessel	Posts	Other			
0	-	4,164	3,025	3,804	10,000	8,200	6,140	900		0	(36,238)
1	-	4,284	3,025	2,452			6,140	300		0	(16,201)
2	-	4,284	3,025	2,452			6,140	300		0	(16,201)
3	20,000	4,116	3,025	3,026				900	8,933	0	8,933
4	20,000	4,116	3,025	3,026				300	9,533	0	9,533
5	20,000	4,116	3,025	3,026				900	8,933	0	8,933
6	20,000	4,116	3,025	3,026		2,200		300	7,333	0	7,333
7	20,000	4,116	3,025	3,026				300	9,533	0	9,533
8	20,000	4,116	3,025	3,026				900	8,933	0	8,933
9	20,000	4,116	3,025	3,026				300	9,533	0	9,533
10	20,000	4,116	3,025	3,026				900	8,933	0	8,933

*Little or no income tax is payable over the 10 year period. Losses in a particular year can be carried forward up to five years to reduce taxable income.

Table 2d. Projected yearly cash flow budget - deep water longline. (Terminal or salvage value not included.)

YEAR	REVENUE	OPERATING EXPENSES			CAPITAL EXPENSES				NET INCOME BEFORE TAXES	INCOME TAX*	NET ANNUAL
		Labour	Seed	Other	Vehicle	Vessel	Other	Longline System			
0	-	1,986	3,025	3,479	10,000	8,200	1,000	4,270	0	0	(31,960)
1	-	2,106	3,025	2,122			400	4,270		0	(11,923)
2	20,000	3,396	3,025	2,615			400		10,564	0	10,564
3	20,000	3,396	3,025	2,615			400		10,564	0	10,564
4	20,000	3,396	3,025	2,615			400		10,564	0	10,564
5	20,000	3,396	3,025	2,683			1,000		9,896	0	9,896
6	20,000	3,396	3,025	2,683		2,200	400	760	7,536	0	7,536
7	20,000	3,396	3,025	2,615			400	760	9,804	0	9,804
8	20,000	3,396	3,025	2,615			400		10,564	0	10,564
9	20,000	3,396	3,025	2,615			400		10,564	0	10,564
10	20,000	3,396	3,025	2,705			1,000		9,874	0	9,874

*Little or no income tax is payable over the 10 year period. Losses in a particular year can be carried forward up to five years to reduce taxable income.

Table 2e. Projected yearly cash flow budget for an integrated bottom culture and processing plant operation. (Terminal or salvage value not included.)

YEAR	REVENUE	OPERATING EXPENSES		CAPITAL EXPENSES				NET INCOME BEFORE TAXES	INCOME TAX*	NET ANNUAL
		Labour	Other	Building	Vehicle	Vessel	Other			
0	-	1,050	6,940		10,000	8,200	600		0	(26,790)
1	-	2,940	6,353						0	(9,293)
2	-	2,940	6,353						0	(9,293)
3	-	2,940	7,973	30,000			10,320		0	(51,233)
4	48,700	15,675	18,643				600	13,782	0	13,782
5	48,700	15,675	18,903				600	13,355	0	13,355
6	48,700	15,675	18,903			2,200	500	11,422	0	11,422
7	48,700	15,675	18,903					14,122	0	14,122
8	48,700	15,675	18,903				600	13,522	0	13,522
9	48,700	15,675	18,903				1,100	13,022	0	13,022
10	48,700	15,675	18,903				600	13,522	0	13,522

*Little or no income tax is payable over the 10 year period. Losses in a particular year can be carried forward up to five years to reduce taxable income.

Appendix III. Maximum rates of capital cost allowance for depreciable assets.

Class	Depreciable Asset	Rate
10	Truck	30%
7	Vessel (skiff)	15%
10	Outboard Motor	30%
8	Processing Plan & Components	20%
8	Culture Systems	20%
12	Tools under $200	100%

Appendix IV. Partial disinflation scenario[1] by Central Statistics Bureau, Ministry of Industry and Small Business Development.

Year	Vancouver CPI (% Change)
1983	5.5
1984	5.8
1985	8.0
1986	8.5
1987	6.0
1988	5.0
1989	6.5
1990	8.0
1991	6.0
1992	6.0
1993	6.0
1994	6.0
1995	5.5
1996	5.5
1997	5.0
1998	5.0
1999	5.0
2000	4.5
2001	4.5
2002	4.5

[1]PDS is one of four scenarios prepared by the Central Statistics Bureau for the Ministry of Energy, Mines and Petroleum Resources in late 1982.

APPENDIX V. Projected yearly discounted cash flow budgets with associated internal rates of return on equity and payback periods.

Table 5a. Projected yearly cash flow budget for a low level production bottom culture operation (8,907 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	7848	-7848	18800	-26648	0	-26648
1984	0	9654	-9654	0	-9654	0	-9654
1985	0	10214	-10214	0	-10214	0	-10214
1986	0	11031	-11031	0	-11031	0	-11031
1987	26159	16166	9993	785	9208	0	9208
1988	27729	17344	10384	3802	6582	0	6582
1989	29115	18211	10904	0	10904	0	10904
1990	31007	19395	11612	0	11612	0	11612
1991	33488	20947	12541	0	12541	1490	11052
1992	35497	22204	13294	1065	12229	2397	9831
1993	37627	23536	14091	24081	-9990	1809	-11799
1994	39885	24948	14937	0	14937	1784	13233
1995	42278	26445	15833	0	15833	2618	13215
1996	44683	27899	16784	0	16784	3223	13481
1997	47056	29434	17623	1412	16211	3549	12662
1998	49489	30985	18504	6917	11586	3574	8013
1999	51888	32451	19429	0	19429	3976	15453
2000	54474	34073	20400	0	20400	4685	15796
2001	56925	35607	21318	0	21318	4976	16342
2002	111598	37209	74389	1785	72604	18121	54483
TOT	718738	455522	263208	58727	204481	52040	152441

INTERNAL RATE OF RETURN ON EQUITY IS 12.19

PAY-BACK PERIOD IS 9.84 YEARS

Table 5b. Projected yearly cash flow budget for a low level production stake culture operation (8,907 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	8245	-8245	30815	-39060	0	-39060
1984	0	7400	-7400	12676	-20076	0	-20076
1985	0	7829	-7829	13411	-21240	0	-21240
1986	24110	12230	11880	2589	9291	0	9291
1987	26159	13269	12890	2025	10865	0	10865
1988	27729	14065	13663	6028	7635	0	7635
1989	29115	14769	14346	2254	12093	295	11798
1990	31007	15729	15279	2400	12879	1527	11352
1991	33488	16987	16501	3597	12905	2093	10812
1992	35497	18006	17491	2747	14744	2623	12121
1993	37627	19086	18541	26994	-8453	2216	-10669
1994	39885	20232	19653	3087	16566	2041	14525
1995	42278	21445	20832	3272	17560	3021	14539
1996	44603	22625	21978	4790	17188	3519	13669
1997	47056	23869	23187	3642	19545	4081	15464
1998	49409	25063	24346	10742	13605	4325	9280
1999	51880	26316	25564	4015	21548	4602	16946
2000	54474	27632	26842	4216	22626	5282	17344
2001	56925	28875	28050	6114	21936	5482	16454
2002	87788	30175	57613	4604	53009	12940	40069
TOT	719029	373846	345184	150819	195165	54046	141118

INTERNAL RATE OF RETURN ON EQUITY IS 9.91

PAY-BACK PERIOD IS 12.18 YEARS

Table 5c. Projected yearly cash flow budget for a low level production near bottom longline operation (8,907 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	10998	-10998	25240	-36238	0	-36238
1984	0	10298	-10298	6794	-17092	0	-17092
1985	0	10895	-10895	7188	-18083	0	-18083
1986	24110	12256	11854	1085	10769	0	10769
1987	26159	13298	12861	392	12469	0	12469
1988	27729	14096	13633	4298	9335	0	9335
1989	29115	14801	14314	437	13878	902	12976
1990	31007	15763	15245	465	14780	2176	12604
1991	33488	16897	16591	1507	15084	2756	12328
1992	35497	17956	17541	532	17009	3267	13742
1993	37627	19081	18546	24646	-6100	2844	-8943
1994	39885	20277	19608	598	19010	2656	16353
1995	42278	27310	14968	13613	1354	1863	-509
1996	44603	28928	15676	15700	-25	1661	-1685
1997	47056	30642	16415	15152	1263	1603	-341
1998	49409	25636	23774	7658	16115	3344	12771
1999	51880	27127	24753	778	23975	3888	20087
2000	54474	28706	25768	817	24951	4770	20181
2001	56925	30314	26611	2562	24050	5102	18948
2002	87788	32015	55773	892	54881	12646	42235
TOT	719829	407291	311739	138357	181382	49477	131905

INTERNAL RATE OF RETURN ON EQUITY IS 10.00

PAY-BACK PERIOD IS 9.07 YEARS

Table 5d. Projected yearly cash flow budget for a low level production deep water longline operation (8,907 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	8490	-8490	23470	-31960	0	-31960
1984	0	7652	-7652	4927	-12579	0	-12579
1985	22324	10086	12238	446	11791	0	11791
1986	24110	10893	13217	482	12735	524	12211
1987	26159	11819	14340	523	13817	2317	11500
1988	27729	13246	14483	4437	10046	2415	7631
1989	29115	13908	15207	1689	13518	2694	10824
1990	31007	14009	16998	1798	15200	3404	11796
1991	33488	15130	18358	670	17688	3881	13808
1992	35497	16036	19460	718	18750	4283	14466
1993	37627	18298	19329	30168	-10839	3208	-14047
1994	39885	19396	20489	6451	14037	2715	11322
1995	42278	19101	23177	2452	20725	3911	16814
1996	44683	20152	24451	2587	21864	4586	17278
1997	47056	21260	25796	941	24855	5213	19642
1998	49489	23603	25886	7985	17901	5077	12824
1999	51880	24783	27097	1838	26859	5439	20620
2000	54474	24611	29862	1089	28773	6552	22221
2001	56925	25719	31206	3382	27985	7082	20903
2002	78791	26876	51915	3450	48464	12199	36265
TOT	732356	345869	387287	98536	288752	75419	213332

INTERNAL RATE OF RETURN ON EQUITY IS 21.49

PAY-BACK PERIOD IS 6.13 YEARS

Table 5e. Projected yearly cash flow budget for a low level production bottom culture operation integrated with a processing plant (8,907 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	8	-7990	18800	-26790	0	-26790
1984	0	10	-9804	0	-9804	0	-9804
1985	0	10	-10373	0	-10373	0	-10373
1986	0	13	-13155	48605	-61761	0	-61761
1987	64	45	18819	785	18034	0	18034
1988	68	48	19587	3882	15705	0	15705
1989	71	50	20567	728	19839	0	19839
1990	76	54	21903	0	21903	2321	19583
1991	82	58	23656	0	23656	3655	20001
1992	86	61	25075	1952	23123	4265	18857
1993	92	65	26580	24081	2498	4024	-1526
1994	97	69	28174	0	28174	4361	23814
1995	103	73	29865	1057	28808	5461	23347
1996	109	77	31507	4460	27047	6247	20800
1997	115	81	33240	1412	31829	6901	24928
1998	120	85	34902	8153	26750	7073	19676
1999	126	90	36647	0	36647	7767	28880
2000	133	94	38480	0	38480	8836	29644
2001	139	98	40211	1423	38788	9290	29499
2002	234	103	131629	1785	129844	32067	97777
TOT	1713	1193	519521	117123	402398	102268	300130

INTERNAL RATE OF RETURN ON EQUITY IS 14.27

PAY-BACK PERIOD IS 9.83 YEARS

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000
COLUMN 3 HAS BEEN DIVIDED BY 1000

Table 5f. Projected yearly cash flow budget for a high level production bottom culture operation (17,814 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	15000	-15000	18800	-33800	0	-33800
1984	0	18553	-18553	0	-18553	0	-18553
1985	0	19629	-19629	0	-19629	0	-19629
1986	0	21200	-21200	0	-21200	0	-21200
1987	52	31134	21184	1570	19614	0	19614
1988	55	33987	21470	3882	17588	0	17588
1989	58	35686	22544	0	22544	0	22544
1990	62	38006	24009	0	24009	1567	22442
1991	67	41046	25930	0	25930	5491	20439
1992	71	43509	27486	2130	25356	5882	19474
1993	75	46128	29135	24081	5053	5485	-432
1994	80	48887	30883	0	30883	5724	25158
1995	85	51820	32736	0	32736	6868	25868
1996	89	54670	34536	0	34536	7698	26839
1997	94	57677	36436	2823	33612	8088	25525
1998	99	60561	38257	6917	31340	8344	22996
1999	104	63589	40170	0	40170	9167	31004
2000	109	66768	42179	0	42179	10053	32125
2001	114	69773	44077	0	44077	10669	33408
2002	222	72913	148973	3569	145404	36546	108858
TOT	1436	890689	545542	63773	481769	121581	360188

INTERNAL RATE OF RETURN ON EQUITY IS 16.46

PAY-BACK PERIOD IS 8.54 YEARS

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000

Table 5g. Projected yearly cash flow budget for a high level production stake culture operation (17,814 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	15192	-15192	42830	-58022	0	-58022
1984	0	13325	-13325	25352	-38676	0	-38676
1985	0	14097	-14097	26822	-40920	0	-40920
1986	48	22533	25686	5179	20508	0	20508
1987	52	24448	27870	4049	23820	0	23820
1988	55	26054	29403	8174	21229	1710	19519
1989	58	27356	30874	4507	26367	3353	23013
1990	62	29135	32880	4800	28080	4654	23426
1991	67	31465	35511	7193	28317	5576	22742
1992	71	33353	37641	5495	32146	6486	25660
1993	75	35355	39900	29906	9994	6576	3418
1994	80	37476	42294	6174	36120	6767	29353
1995	85	39724	44831	6545	38287	8114	30173
1996	89	41909	47297	9581	37716	8788	28929
1997	94	44214	49899	7284	42614	9700	32914
1998	99	46425	52393	14566	37828	10437	27391
1999	104	48746	55013	8831	46982	11048	35934
2000	109	51183	57764	8433	49331	12073	37258
2001	114	53487	60363	12227	48136	12380	35755
2002	174	55894	118373	9209	109164	26918	82246
TOT	1437	691372	745378	246357	499022	134580	364441

INTERNAL RATE OF RETURN ON EQUITY IS 13.72

PAY-BACK PERIOD IS 9.18 YEARS

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000

Table 5h. Projected yearly cash flow budget for a high level production near bottom longline operation (17,814 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	20698	-20698	31680	-52378	0	-52378
1984	0	19121	-19121	13588	-32709	0	-32709
1985	0	20230	-20230	14377	-34606	0	-34606
1986	48	22586	25633	2170	23464	0	23464
1987	52	24506	27812	785	27027	0	27027
1988	55	26115	29342	4714	24628	1676	22952
1989	58	27421	30809	873	29936	4819	25117
1990	62	29203	32812	938	31882	6008	25874
1991	67	31539	35437	3014	32423	6854	25569
1992	71	33431	37563	1065	36498	7719	28780
1993	75	35437	39817	25210	14607	7784	6823
1994	80	37564	42206	1197	41010	7969	33040
1995	85	51342	33213	27227	5987	5796	191
1996	89	54166	35040	31401	3640	5129	-1490
1997	94	57145	36967	30304	6663	4870	1793
1998	99	46534	52285	8400	43885	8710	35175
1999	104	48868	54899	1556	53343	9976	43367
2000	109	51303	57644	1634	56010	11540	44470
2001	114	53612	60238	5123	55115	12294	42821
2002	174	56824	118242	1785	116457	27204	89253
TOT	1437	746837	689913	207033	482880	128348	354532

INTERNAL RATE OF RETURN ON EQUITY IS 15.57

PAY-BACK PERIOD IS 7.82 YEARS

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000

Table 5i. Projected yearly cash flow budget for a high level production deep water longline operation (17,814 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	15688	-15688	28740	-44428	0	-44428
1984	0	13835	-13835	9854	-23689	0	-23689
1985	45	18395	26253	893	25360	0	25360
1986	48	19866	28353	964	27389	3802	23586
1987	52	21555	30763	1046	29717	5986	23731
1988	55	24396	31062	5823	25239	6000	19159
1989	58	25417	32813	3377	29435	6635	22801
1990	62	25674	36341	3597	32744	7866	24877
1991	67	27728	39248	1348	37900	8743	29165
1992	71	29711	41283	1420	39863	9417	30447
1993	75	33752	41583	37383	4120	8183	-4063
1994	80	35418	44352	12903	31449	7884	23565
1995	85	35006	49550	4904	44645	9757	34889
1996	89	36931	52275	5174	47101	10818	36283
1997	94	39283	54830	1882	52948	11804	41143
1998	99	43470	55348	10376	44972	11695	33277
1999	104	45291	58468	2075	56393	12580	43813
2000	109	45104	63843	2179	61664	14581	47084
2001	114	47134	66716	6683	60113	15397	44716
2002	156	49255	107017	6900	100117	25420	74697
TOT	1463	632918	838494	147434	683060	176648	506413

INTERNAL RATE OF RETURN ON EQUITY IS 29.69

PAY-BACK PERIOD IS 4.81 YEARS

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000

Table 5j. Projected yearly cash flow budget for a high level production bottom culture operation integrated with a processing plant (17,814 liters/year).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	15	-15	18000	-33780	0	-33780
1984	0	19	-19	0	-18553	0	-18553
1985	0	20	-20	0	-19629	0	-19629
1986	0	25	-25	49200	-74313	0	-74313
1987	127	86	41	1570	39599	0	39599
1988	135	92	43	3882	38772	0	38772
1989	142	97	45	0	44787	6643	38144
1990	151	103	48	1550	46148	9034	37114
1991	163	112	52	0	51514	10599	40915
1992	173	118	55	2130	52475	11766	40710
1993	183	125	58	24081	33800	11940	21860
1994	194	133	61	1994	59360	12498	46862
1995	206	141	65	0	65036	14210	50825
1996	217	149	69	4460	64152	15715	48438
1997	229	157	72	2823	69563	16559	53003
1998	241	165	76	9388	66618	17057	49560
1999	253	173	80	0	79006	18434	61372
2000	265	182	84	0	83796	20191	63605
2001	277	190	88	0	87567	21327	66240
2002	438	190	232	6544	225374	56739	168635
TOT	3387	2299	1089	126430	962091	242711	719380

INTERNAL RATE OF RETURN ON EQUITY IS 21.63

PAY-BACK PERIOD IS 7.00 YEARS

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000
COLUMN 3 HAS BEEN DIVIDED BY 1000
COLUMN 4 HAS BEEN DIVIDED BY 1000

Table 5k. Projected yearly cash flow budget for a low level production bottom culture operation with a setting tank and less expensive capital acquisitions (vehicle and vessel).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	6120	-6120	10800	-16920	0	-16920
1984	0	7821	-7821	0	-7821	0	-7821
1985	0	8274	-8274	0	-8274	0	-8274
1986	24110	9177	14932	723	14209	0	14209
1987	26159	13893	12266	0	12266	262	12003
1988	27729	15087	12641	3882	8759	2468	6291
1989	29115	15841	13274	0	13274	2674	10599
1990	31007	16871	14136	0	14136	3144	10993
1991	33488	18221	15267	1005	14263	3408	10855
1992	35497	19314	16183	0	16183	3713	12470
1993	37627	20473	17154	14675	2480	3487	-1007
1994	39885	21701	18183	0	18183	3428	14753
1995	42278	23003	19274	0	19274	4129	15145
1996	44683	24269	20335	1338	18996	4429	14567
1997	47056	25603	21453	0	21453	4851	16602
1998	49489	26884	22526	6917	15608	4998	10611
1999	51880	28228	23652	0	23652	5207	18445
2000	54474	29639	24835	0	24835	5842	18993
2001	56925	30973	25952	1708	24244	6016	18229
2002	60426	32367	40859	0	40859	11618	36441
TOT	711667	393760	317908	41048	276860	69675	207185

INTERNAL RATE OF RETURN ON EQUITY IS 25.18

PAY-BACK PERIOD IS 6.85 YEARS

Table 51. Projected yearly cash flow budget for a low level production stake culture operation with a setting tank and less expensive capital acquisitions (vehicle and vessel).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	6780	-6780	22815	-29595	0	-29595
1984	0	5854	-5854	12676	-18530	0	-18530
1985	22324	9689	12635	14081	-1445	0	-1445
1986	24110	10464	13646	1866	11780	490	11290
1987	26159	11353	14806	2025	12781	1569	11212
1988	27729	12034	15694	6028	9666	1928	7738
1989	29115	12636	16479	2254	14226	2312	11913
1990	31007	13457	17550	3330	14220	2827	11394
1991	33488	14442	19047	2592	16455	3388	13066
1992	35497	15341	20157	2747	17409	3916	13493
1993	37627	16296	21331	17587	3744	3655	89
1994	39885	17311	22574	3087	19487	3673	15814
1995	42278	18389	23889	4541	19348	4282	15066
1996	44683	19485	25118	3452	21666	4791	16874
1997	47056	20646	26410	3642	22768	5406	17362
1998	49409	21822	27587	10742	16845	5395	11451
1999	51880	23866	28814	4015	24798	5607	19191
2000	54474	24382	30092	5850	24241	6033	18208
2001	56925	25718	31215	4406	26809	6390	20419
2002	70876	27113	42962	4604	38358	9572	28786
TOT	723641	326271	397370	132341	265029	71234	193795

INTERNAL RATE OF RETURN ON EQUITY IS 17.41

PAY-BACK PERIOD IS 7.65 YEARS

Table 5m. Projected yearly cash flow budget for a low level production near bottom longline operation with a setting tank and less expensive capital acquisitions (vehicle and vessel).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	9533	-9533	17240	-26773	0	-26773
1984	0	8752	-8752	6794	-15546	0	-15546
1985	22324	12756	9568	7858	1710	0	1710
1986	24110	10490	13620	362	13258	0	13258
1987	26159	11382	14777	392	14385	1923	12462
1988	27729	12065	15664	4298	11366	2561	8805
1989	29115	12676	16438	437	16002	2913	13089
1990	31007	13500	17507	1395	16112	3405	12707
1991	33488	14580	18908	582	18485	3930	14475
1992	35497	15455	20042	532	19510	4460	15050
1993	37627	16383	21245	15239	6006	4207	1798
1994	39885	17366	22519	598	21921	4241	17680
1995	42278	24177	18101	14882	3219	3106	113
1996	44603	25507	19096	14362	4734	2972	1762
1997	47056	20488	26568	15152	11416	4634	6782
1998	49409	21512	27897	7658	20238	4613	15626
1999	51880	22588	29292	778	28513	5197	23316
2000	54474	23717	30756	2451	28305	5942	22363
2001	56925	24785	32140	854	31286	6590	24697
2002	70076	25900	44175	892	43283	10031	33252
TOT	723641	343614	380027	112679	267349	70724	196625

INTERNAL RATE OF RETURN ON EQUITY IS 20.66

PAY-BACK PERIOD IS 6.46 YEARS

Table 5n. Projected yearly cash flow budget for a low level production deep water longline operation with a setting tank and less expensive capital acquisitions (vehicle and vessel).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	7025	-7025	15470	-22495	0	-22495
1984	21100	8715	12385	4927	7458	181	7277
1985	22324	8451	13873	446	13427	2575	10852
1986	24110	9127	14983	482	14501	3041	11460
1987	26159	9903	16257	523	15733	3498	12236
1988	27729	11215	16514	4437	12077	3445	8632
1989	29115	11776	17339	1689	15651	3618	12033
1990	31007	11738	19270	1798	17471	4266	13205
1991	33488	12677	20811	670	20141	4718	15423
1992	35497	13438	22060	710	21350	5105	16245
1993	37627	15542	22085	20761	1324	4382	-3058
1994	39885	16474	23410	6451	16959	4148	12811
1995	42278	16004	26274	2452	23821	5185	18636
1996	44603	16885	27719	2587	25132	5760	19372
1997	47056	17813	29243	941	28302	6331	21971
1998	49409	19984	29426	7905	21520	6166	15355
1999	51888	20983	30897	1038	29859	6522	23338
2000	54474	20621	33853	1089	32763	7646	25117
2001	56925	21549	35376	3302	32074	8115	23960
2002	65436	22519	42917	3450	39467	10001	29465
TOT	740101	292436	447665	81129	366536	94702	271834

INTERNAL RATE OF RETURN ON EQUITY IS 45.08

PAY-BACK PERIOD IS 3.38 YEARS

Table 5o. Projected yearly cash flow budget for a low level production bottom culture operation integrated with a processing plant, setting tank and less expensive capital acquisitions (vehicle and vessel).

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL INVESTMENT	CASH FLOW BEFORE TAX	INCOME TAX	CASH FLOW AFTER TAX
1983	0	6	-6120	10800	-16920	0	-16920
1984	0	8	-7821	0	-7821	0	-7821
1985	0	10	-9870	45674	-55545	0	-55545
1986	59	39	19840	0	19840	0	19840
1987	64	42	21526	0	21526	1057	20469
1988	68	45	22457	3882	18575	3144	15431
1989	71	47	23580	728	22852	3737	19115
1990	76	50	25113	930	24183	4543	19640
1991	82	54	27122	0	27122	5470	21652
1992	86	58	28749	0	28749	6252	22497
1993	92	61	30474	15615	14859	6117	8742
1994	97	65	32302	0	32302	6374	25928
1995	103	69	34241	5496	28744	7234	21511
1996	109	72	36124	0	36124	7897	28227
1997	115	76	38111	1176	36934	8645	28289
1998	120	80	40016	6917	33099	8911	24188
1999	126	84	42017	0	42017	9548	32469
2000	133	89	44118	1634	42484	10258	32225
2001	139	93	46103	1423	44680	10725	33955
2002	145	97	48185	0	48185	11557	36627
TOT	1682	1146	536266	94277	441989	111469	330520

INTERNAL RATE OF RETURN ON EQUITY IS 21.83

PAY-BACK PERIOD IS 7.28 YEARS

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000
COLUMN 3 HAS BEEN DIVIDED BY 1000

Appendix V1 Projected yearly discounted cash flow budgets incorporating 75% financing of capital expenditures with a 12% interest rate applied to the borrowed money.

Table 6a. Projected yearly cash flow budget for a low level production bottom culture operation with a setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	6120	-6120	16000	-16000	0160	0	-0020	0	-0020
1984	0	7821	-7821	0	-7821	0	0	-7821	0	-7821
1985	0	0274	-0274	0	-0274	0	0	-0274	0	-0274
1986	24110	13000	10222	723	9490	542	0642	1390	0	1390
1987	26159	13893	12266	0	12266	0	0	12266	0	12266
1988	27729	15436	12292	3882	0410	2911	2911	0410	1002	0529
1989	29115	15841	13274	0	13274	0	0	13274	2995	10710
1990	31007	16871	14136	0	14136	0	0	14136	3059	11077
1991	32488	18311	15177	1005	14172	753	753	14172	3325	10947
1992	30497	19314	16183	0	16183	0	0	16183	3670	12513
1993	37627	21794	15834	14675	1159	11006	9030	3126	3126	0
1994	39806	21937	17947	0	17947	0	1969	15980	3947	12032
1995	42278	23003	19274	0	19274	0	0	19274	4114	15160
1996	44603	24389	20214	1338	18876	1004	1004	18876	4398	14480
1997	47056	25603	21453	0	21453	0	0	21453	4843	16610
1998	49489	27586	21903	6917	14986	5180	5180	14986	4836	10150
1999	51890	28220	23652	0	23652	0	0	23652	5203	10449
2000	54474	29639	24835	0	24835	0	0	24835	5839	18996
2001	56928	31127	25798	1708	24091	1201	1201	24091	5978	18116
2002	60426	32367	40059	0	40059	0	0	40059	11617	28442
TOT	711667	401364	310304	41048	269256	20706	20706	269256	67780	201476

Table 6b. Projected yearly cash flow budget for a low level production stake culture operation with a setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	15192	-15192	42830	-58022	32123	0	-25900	0	-25900
1984	0	12325	-12325	25352	-37676	19014	0	-18663	0	-18663
1985	0	14897	-14897	26022	-40920	20117	0	-20803	0	-20803
1986	40	46025	1295	5179	-3884	3884	0	0	0	0
1987	52	42021	10297	4049	6248	3837	9285	0	0	0
1988	55	38956	20401	8174	12227	6131	16357	0	0	0
1989	58	34562	23668	4507	19161	3388	22342	0	0	0
1990	62	34867	27948	4888	23140	3688	25968	781	781	-0
1991	67	33829	33047	7193	25854	5395	26528	10721	3476	7244
1992	71	33848	37147	5496	31652	4121	4121	31652	9213	22439
1993	75	38846	37288	29906	7382	22438	22438	7382	5088	2294
1994	80	36831	41738	6174	35564	4631	4631	35564	5930	29634
1995	85	46313	44242	6545	37698	4908	4908	37698	7421	30277
1996	89	43771	46438	9581	36854	7186	7186	36854	8144	28711
1997	94	44878	49243	7284	41959	5463	5463	41959	9190	32769
1998	98	47736	51683	14566	36517	10934	10934	36517	9843	26674
1999	104	49469	54298	8831	46239	6623	6623	46239	10667	35573
2000	109	51942	57885	8433	46572	6324	6324	46572	11717	34855
2001	114	54887	59263	12227	47035	9171	9171	47035	11973	35062
2002	174	56722	117544	9209	108335	6936	6936	108335	26686	81730
TOT	1437	767589	669348	246357	422884	184768	184768	422884	118966	303918

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000

Table 6c. Projected yearly cash flow budget for a low level production near bottom longline operation with a setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	28898	-28898	31680	-62378	23760	0	-28618	0	-28618
1984	0	19121	-19121	13000	-32789	10191	0	-22518	0	-22518
1985	0	28220	-28220	14377	-34486	10762	0	-23624	0	-23624
1986	40	43278	4942	2178	2772	1627	4399	0	0	0
1987	52	29612	22786	785	21921	589	22510	0	0	0
1988	85	28944	26513	4714	21799	3535	23676	1758	0	1758
1989	58	27488	30731	873	29857	655	656	29867	1941	27916
1990	62	29387	32728	930	31798	698	698	31798	5488	26388
1991	67	31818	35166	3014	32152	2260	2260	32152	6337	25815
1992	71	33827	37467	1065	36483	799	799	36483	7349	29853
1993	75	37786	37548	25218	12338	18908	18908	12338	6949	5388
1994	80	37671	42898	1157	40982	897	897	40982	7735	33167
1995	85	53793	38763	27227	3536	20428	18934	5822	5822	0
1996	59	57171	32836	31481	635	23558	19933	4252	4252	0
1997	94	60485	33628	30304	3323	22728	22115	3936	3936	0
1998	99	47975	50843	8400	42443	6300	12016	36727	8272	28455
1999	104	49999	54759	1556	53203	1167	1167	53203	9879	43323
2000	109	51458	57497	1634	55863	1226	1226	55863	11458	44406
2001	114	54873	59777	5123	54654	3842	3842	54654	12140	42514
2002	174	56185	118881	1785	116296	1338	1338	116296	27133	89163
TOT	1437	709815	647234	287933	440282	155278	185278	440282	117882	322399

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000

Table 6d. Projected yearly cash flow budget for a low level production deep water longline operation with a setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	15688	-15688	28748	-44436	21555	0	-22873	0	-22873
1984	0	13835	-13835	9854	-23689	7399	0	-16290	0	-16290
1985	45	29883	15564	893	14671	678	15341	0	0	0
1986	48	21666	26353	964	25389	723	14997	11315	680	10635
1987	52	21649	30669	1046	29622	785	785	29622	5962	23660
1988	55	24928	30537	5823	24714	4367	4367	24714	5949	18766
1989	58	25721	32389	3377	29131	2533	2533	29131	6859	22273
1990	62	25998	36017	3597	32420	2698	2698	32420	7785	24635
1991	67	27849	39127	1348	37780	1885	1885	37780	8713	29067
1992	71	29439	41156	1420	39736	1865	1865	39736	9385	30351
1993	75	37116	38138	37383	756	28837	21451	7342	7342	0
1994	88	37369	42488	12983	29498	9677	16263	22911	7396	15515
1995	85	35447	49188	4984	44204	3678	3678	44204	9647	34557
1996	89	37297	51089	5174	46635	3889	3889	46635	10782	35834
1997	94	39452	54661	1882	52778	1412	1412	52778	11762	41016
1998	99	44484	54414	10376	44038	7782	7782	44038	11461	32577
1999	184	45478	58282	2875	56206	1556	1556	56206	12533	43673
2000	189	45388	63647	2179	61468	1634	1634	61468	14532	46936
2001	114	47728	66122	6603	59518	4952	4952	59518	15248	44270
2002	136	48876	186396	6900	99496	5175	5175	99496	25264	74231
TOT	1463	688817	887887	147434	660153	118678	118678	660153	178921	489232

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000

Table 6e. Projected yearly cash flow budget for a low level production bottom culture operation integrated with a processing plant, setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	6	-6120	18000	-16920	8100	0	-8820	0	-8820
1984	0	0	-7821	0	-7821	0	0	-7821	0	-7821
1985	0	10	-9870	45674	-55545	34256	0	-21289	0	-21289
1986	50	32	6400	0	6400	0	6400	0	0	0
1987	64	46	17221	0	17221	0	17221	0	0	0
1988	69	40	19869	3082	15987	2911	17589	1389	1389	0
1989	71	48	23020	720	22300	546	4604	18242	3116	15126
1990	76	50	25029	930	24099	698	698	24099	4146	19953
1991	82	54	27122	0	27122	0	0	27122	5177	21945
1992	86	58	28749	0	28749	0	0	28749	6022	22727
1993	92	63	29869	15615	13453	11711	11711	13453	5585	7868
1994	97	65	32382	0	32382	0	0	32382	6232	26070
1995	103	69	33746	5496	28250	4122	4122	28250	6998	21252
1996	109	72	36124	0	36124	0	0	36124	7808	28315
1997	115	77	38085	1176	36828	882	882	36828	8548	28280
1998	120	81	39394	6917	32476	5188	5188	32476	8699	23777
1999	126	84	42017	0	42017	0	0	42017	9684	32313
2000	133	89	43971	1634	42337	1226	1226	42337	10186	32150
2001	139	93	45975	1423	44552	1067	1067	44552	10665	33887
2002	145	97	48185	0	48185	0	0	48185	11535	36650
TOT	1682	1178	512472	94277	418195	78788	78788	418195	105611	312584

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000
COLUMN 3 HAS BEEN DIVIDED BY 1000

Table 6f. Projected yearly flow budget for a high level production bottom culture operation with a setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	15	-15	18900	-33780	14180	0	-19600	0	-19600
1984	0	19	-19	0	-18553	0	0	-18553	0	-18553
1985	0	20	-20	0	-19629	0	0	-19629	0	-19629
1986	0	25	-25	49200	-74313	36906	0	-37407	0	-37407
1987	127	107	21	1570	19328	1177	28497	-0	0	-0
1988	135	97	39	3802	34621	2911	34597	2935	0	2935
1989	142	97	45	0	44787	0	0	44787	1657	43130
1990	151	103	48	1550	46998	1163	1163	46998	9784	37225
1991	163	112	52	0	51514	0	0	51514	10426	41089
1992	173	118	54	2130	52284	1597	1597	52284	11578	40706
1993	183	128	56	24081	31633	18061	18061	31633	11285	20347
1994	194	133	61	1994	59181	1496	1496	59181	12362	46819
1995	206	141	65	0	65836	0	0	65836	14137	50899
1996	217	149	68	4460	63751	3345	3345	63751	15555	48196
1997	229	157	72	2823	69389	2118	2118	69389	16448	52861
1998	241	165	75	9388	65773	7041	7041	65773	16887	48966
1999	253	173	80	0	79886	0	0	79886	18482	61404
2000	265	182	84	0	83796	0	0	83796	20165	63631
2001	277	190	88	0	87567	0	0	87567	21386	66260
2002	430	199	231	6544	224785	4908	4908	224785	56575	168210
TOT	3387	2329	1059	126438	932893	94823	94823	932893	235406	697487

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000
COLUMN 3 HAS BEEN DIVIDED BY 1000
COLUMN 4 HAS BEEN DIVIDED BY 1000

Table 6g. Projected yearly cash flow budget for a high level production stake culture operation with a setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	6780	-6780	22815	-29595	17111	0	-12484	0	-12484
1984	0	5854	-5854	12676	-18530	9507	0	-9023	0	-9023
1985	22334	18804	3530	14081	-10561	10561	0	0	0	0
1986	24110	16773	7337	1866	5471	1408	6871	0	0	0
1987	26159	15348	10819	2025	8794	1519	10313	0	0	0
1988	27729	15326	12402	6028	6374	4521	10688	215	215	0
1989	29115	14849	14266	2254	12012	1690	12378	1325	1325	0
1990	31887	14488	16522	3330	13192	2498	8563	7125	2239	4886
1991	33488	14675	18813	2592	16221	1944	1944	16221	3077	13144
1992	35497	15588	19909	2747	17162	2061	2061	17162	3660	13502
1993	37627	17879	19748	17587	2161	13190	12242	3109	3109	0
1994	39885	17783	22102	3007	19095	2315	3263	18147	3459	14688
1995	42278	18738	23480	4541	18939	3405	3405	18939	4098	14849
1996	44603	19796	24807	3452	21355	2589	2589	21355	4643	16712
1997	47856	20974	26882	3642	22448	2732	2732	22448	5269	17171
1998	49489	22789	26628	10742	15879	8056	8056	15879	5110	10769
1999	51889	23428	28452	4015	24437	3012	3012	24437	5482	18954
2000	54474	24909	29565	5850	23714	4388	4388	23714	5875	17840
2001	56925	26107	30818	4406	26412	3304	3304	26412	6270	20142
2002	78876	27528	42348	4604	37944	3453	3453	37944	9451	28492
TOT	723641	358383	365258	132341	232917	99255	99255	232917	63273	169644

Table 6h. Projected yearly cash flow budget for a high level production near bottom longline operation with a setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	9533	-9533	17240	-26773	12930	0	-13843	0	-13843
1984	0	8752	-8752	6794	-15546	5096	0	-10451	0	-10451
1985	22324	19995	2329	7858	-5529	5893	364	0	0	0
1986	24110	13349	10760	362	10399	271	10678	0	0	0
1987	26150	12996	13163	392	12771	294	13065	0	0	0
1988	27729	12498	15231	4298	10933	3223	3689	10547	2229	8318
1989	29115	12716	16399	437	15962	328	328	15962	2747	13216
1990	31087	13626	17381	1395	15986	1047	1047	15986	3249	12737
1991	33488	14626	18862	882	18360	377	377	18360	3820	14540
1992	35497	15503	19994	532	19462	399	399	19462	4369	15093
1993	37627	17754	19873	15239	4634	11429	11429	4634	3801	833
1994	39885	17419	22465	598	21867	449	449	21867	4177	17690
1995	42278	25517	16761	14882	1880	11161	10311	2730	2730	0
1996	44803	26962	17782	14362	3339	10772	11521	2590	2590	0
1997	47856	21864	25192	15152	10040	11364	11466	9938	4264	5674
1998	49489	22282	27207	7658	19549	5744	5744	19549	4419	15130
1999	51888	22658	29222	778	28443	584	584	28443	5162	23281
2000	54474	23938	30536	2451	28084	1838	1838	28084	5873	22211
2001	56925	24862	32063	854	31209	648	648	31209	6559	24650
2002	78876	25980	44895	892	43283	669	669	43283	10083	33200
TOT	723641	362698	360951	112679	248273	84589	84589	248273	65993	182280

Table 6i. Projected yearly cash flow budget for a high level production deep water longline operation with a setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	7825	-7825	15470	-22495	11603	0	-10893	0	-10893
1984	21180	12110	8990	4927	4063	3695	7758	0	0	0
1985	22324	9396	12928	446	12482	336	7875	4942	2033	2909
1986	24110	9170	14940	482	14457	362	362	14457	2921	11536
1987	26109	9988	16209	523	15686	392	392	15686	3410	12277
1988	27729	11614	16114	4437	11678	3327	3327	11678	3292	8386
1989	29115	11928	17187	1689	15499	1267	1267	15499	3563	11936
1990	31867	11980	19188	1798	17389	1349	1349	17389	4288	13110
1991	33468	12737	20731	670	20061	502	502	20061	4685	15397
1992	35497	13501	21996	710	21286	532	532	21286	5076	16210
1993	37627	17418	20217	20761	-544	15571	11128	3986	3986	0
1994	39985	17589	22396	6451	15944	4839	9269	11394	3863	7531
1995	42278	16225	26053	2452	23601	1839	1839	23601	5126	18475
1996	44683	17117	27466	2587	24899	1940	1940	24899	5699	19200
1997	47856	17898	29158	941	28217	706	706	28217	6307	21910
1998	49489	20695	28714	7905	20809	5929	5929	20809	5986	14822
1999	51888	21876	30084	1838	29766	778	778	29766	6497	23269
2000	54474	20719	33755	1089	32665	817	817	32665	7628	25045
2001	56925	21046	35879	3382	31777	2476	2476	31777	8040	23737
2002	65436	22929	42606	3450	39156	2588	2588	39156	9923	29233
TOT	748181	332736	437365	81129	356236	68047	60947	356236	82128	264109

Table 6j. Projected yearly cash flow budget for a high level production bottom culture operation integrated with a processing plant, setting tank and less expensive capital acquisitions - incorporates 75% financing of capital expenditures.

YEAR	GROSS REVENUE	TOTAL EXPENSES	NET PROFIT	CAPITAL EXPENDITURE	CASH FLOW BEFORE FINANCING	BORROWINGS	LOAN REPAYMENT	CASH FLOW BEFORE TAX	INCOME TAX	NET CASH FLOW
1983	0	15000	-15000	18000	-33000	14100	0	-19700	0	-19700
1984	0	18553	-18553	0	-18553	0	0	-18553	0	-18553
1985	0	19629	-19629	0	-19629	0	0	-19629	0	-19629
1986	0	21200	-21200	0	-21200	0	0	-21200	0	-21200
1987	32	42825	10293	1570	8724	1177	9901	0	0	0
1988	55	34981	20476	3882	16594	2911	8298	11217	0	11217
1989	58	35686	22544	0	22544	0	0	22544	0	22544
1990	62	38086	24009	0	24009	0	0	24009	0	24009
1991	67	41046	25938	0	25938	0	0	25938	4544	21386
1992	71	43701	27294	2130	25164	1597	1597	25164	5697	19467
1993	75	46287	26967	24081	2886	18861	16180	4847	4847	0
1994	80	49122	30647	0	30647	0	1961	28686	5898	23888
1995	85	51828	32736	0	32736	0	0	32736	6821	25915
1996	89	54670	34536	0	34536	0	0	34536	7665	26872
1997	94	57931	36182	2823	33358	2118	2118	33358	8001	25357
1998	99	61183	37635	6917	30718	5108	5108	30718	8172	22546
1999	104	63589	40178	0	40178	0	0	40178	9158	31015
2000	109	66768	42179	0	42179	0	0	42179	10046	32133
2001	114	69773	44877	0	44877	0	0	44877	10463	33414
2002	222	73234	148652	3569	145083	2677	2677	145083	36462	108621
TOT	1436	986286	529865	63773	466092	47829	47829	466092	117671	348422

NOTE
COLUMN 2 HAS BEEN DIVIDED BY 1000